

The PwC ALERT¹ Report

Liquidity

The 2008 financial crisis highlighted that the importance of Liquidity Risk Management, as well as the severity and swiftness with which this risk can materialise, had been severely underestimated by the industry, markets and regulators alike.

SEC - Compliant

What the regulator requests

On 13 Oct 2016, the Securities and Exchange Commission (SEC) adopted the final rule (22e-4) requiring open-ended investment companies to establish Liquidity Risk Management Programs.

Rule 22e-4 requires open-ended funds to:

- Assess, manage and periodically review their liquidity risk;
- Classify their assets into 4 clusters according to their degree of liquidity;
- Set minimum percentage of their portfolio that should be invested in highly liquid assets;
- Limit illiquid investments up to 15% of the NAV, above this threshold triggers a confidential reporting to the SEC

How liquidity impacts investment

Asset side

Also called market/product Liquidity Risk, the asset liquidity risk arises when transactions cannot be conducted at quoted market prices due to the size of the required trade relative to normal trading lots.

Liability side

The liability liquidity risk arises when the fund cannot meet redemption payments or is able to do so only with such an investment deviation that it could originate claims from the investors.

How to approach liquidity risk in the investment fund



How to monitor and manage the portfolio liquidity risk?



Asset side

The common liquidity indicators used to assess the liquidity of the securities (Average traded volume, bid-ask spread, LVaR, etc.) suffer from different drawbacks.

Therefore, instead of relying on single indicators, PwC has extended the scope of liquidity indicators and selected sound liquidity indicators:

- Average traded volume/% of shares held
- Stale prices
- Number of market/Number of pricing providers
- Bid-ask spread
- Stressed bid-ask spread
- Kyle's Lambda

Then, in order to adequately weight them, and create a valid benchmark, we have selected a broad range of fund portfolios and computed the value of all these indicators for each portfolio line.

Finally, weights of the different indicators as well as the global liquidity scale have been scientifically defined by using the Principal Component Analysis econometric method.



Liability side

Forecasting the investors' behaviour is key in liquidity risk management for investment funds but remains a challenging task considering the low level of transparency of investors.

Bearing that in mind, there are still ways of defining potential trends in subscriptions and redemptions.

The past evolution of the number of shares can be used as an indicator of what could happen in the future. But, in order to remain reliable, these analyses need to be based on strong and relevant statistical techniques.

The method selected is therefore based on a structured technical approach relying on Time Series Analysis.

Based on the historical trends of subscriptions and redemptions, we define the function that best fits the past distributions to generate reliable forecasts.

The issue that has to be addressed is not limited to the future trend forecast but should be extended to potential stress levels of redemptions. Therefore, by modelling the past events of subscription-redemptions, we determine different stress scenarios using different intervals of confidence.

Finally, we link these stressed trends to the amount of cash and other liquidity facilities, with certainty available to the fund, to determine how redemptions would affect the fund's liquidity in stressed circumstances.

PwC ALLERT Report

Liquidity



The new regulations regarding liquidity risk pose considerable challenges to the fund industry in various aspects.

Therefore, in order to support clients in this new challenge, at PwC, we have developed a new approach summarised in a comprehensive report called: **The PwC Alert report**.

ALLERT stands for Asset and Liability Liquidity Expected Ratio and Trend as this report provides you with information on the liquidity of the portfolio as well as expectations in terms of subscriptions and redemption both in terms of rating and future trends.

In order to ensure the efficiency of the process, we will provide you with this report duly filled, meaning that your risk team will not spend time on the production of the report but capitalise on their expert judgment to complete, challenge and interpret the results.

Also, as we want this report to be tailored to your needs, we follow a modular approach: you only pay for the module(s) you need.

Deliverables

You will be provided at a defined frequency with the ALLERT report that contains the following:

- 1** A synoptic dashboard;
- 2** The liquidity analysis;
- 3** The portfolio liquidity rating;
- 4** The assets liquidation;
- 5** The ALM view.

1 Dashboard



The dashboard provides a high level reporting of the liquidity risk faced by every sub-fund and their related share classes.

Liquidity Risk Exposure (at sub-fund level)*		Liquidity Risk Exposure (at class level)*		Assets		Liabilities		Summary		ALM View		Summary for Non-Traded Funds							
Liquidity Risk Exposure (at sub-fund level)*	Sub-fund name	Liquidity Risk Exposure (at class level)*	Class name	Class weight	Analysis Type	Cash (% of TNA)	Not Rated (% of TNA)	Equity	Bonds	Traded Funds	Non-Traded Funds	Global	Details	Assets Liquidation	Details for Non-Traded Funds	Cash reaches 0** in	Summary	ALM View	Summary for Non-Traded Funds
	GENERIC PWC FUND	TBD	LU1066281145	100.00%	Assets & Liabilities	4.46%	2.01%		3.84			3-78	Link	Link	N/A	> 30 days	Link	Link	N/A

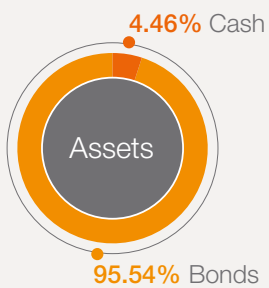
* Liquidity Risk Exposure traffic lights can be tailored to your needs and can be designed based on your criteria
 ** Under a stress scenario with a confidence level of 99%

2 Liquidity Analysis

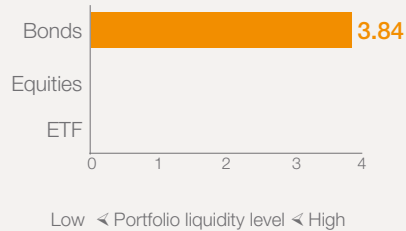


This example shows the aggregate liquidity report for the sub-fund (Assets and Liabilities). In addition, it is also possible to generate liability analyses for each share class independently.

Asset side



Liquidity rating

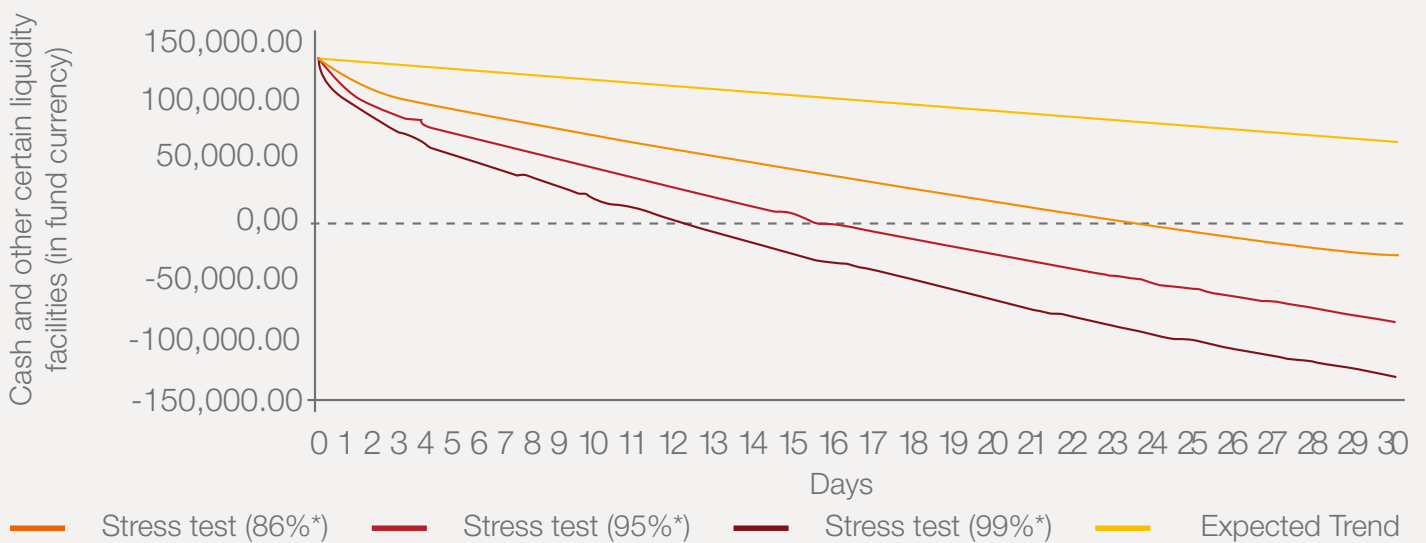


Assets liquidity buckets analysis



Liability side

Redemption scenario analysis



3 Portfolio Liquidity Rating



This example shows a list of the individual securities contained in the portfolio, their liquidity ratings and the details of what composes the liquidity ratings.

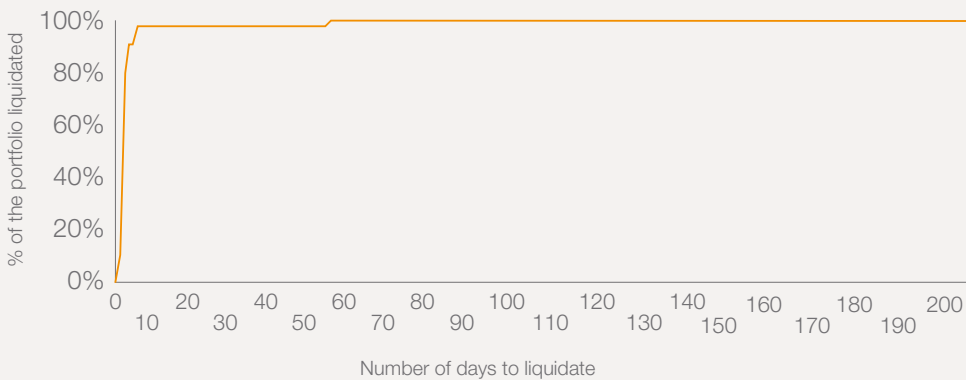
ISIN Code	Asset Name	Market Value	Weight in Portfolio	Type	Liquidity Rating	ABA Risk Factor	SBA Risk Factor	NPC Risk Factor	NDL Risk Factor	KYL Risk Factor
XS1609254187	ANDORRA INTERNATIONAL 1.75% 17-	299.100	10,13%	Bonds	3	(0,11)			(0,26)	
XS0993145084	AT&T INC 2.65% 13-17/DEC/21	217.817	7,38%	Bonds	4	(1,05)	(0,60)	(1,78)	(0,57)	
XS1190663952	BANCO BILBAO VIZCAYA VAR 13-20/DEC/21	210.861	7,14%	Bonds	4	(0,61)	(0,62)	(1,78)	(0,58)	
XS1409497283	GESTAMP FUND LUX 3,5% 06-20/DEC/23	209.882	7,11%	Bonds	4	0,05	(0,41)	(1,65)	(0,53)	
ES0244251007	CAJA DE AHORROS Y MONTE VAR 13-	204.498	6,92%	Bonds	2	1,16	0,65	(1,68)	(0,53)	
XS0802995166	ARN AMRO BANK NV 13-06/JUL/22	128.684	4,36%	Bonds	4	(1,06)	(0,52)	(1,81)	(0,59)	
XS0878743623	AXA SA VAR 13-04/JUL/21	119.575	4,05%	Bonds	4	(0,93)	(0,51)	(1,84)	(0,59)	
XS1088515207	FLAT FINANCE & TRADE 4.75% 14-13/JUL/22	114.415	3,87%	Bonds	4	(0,72)	(0,55)	(1,82)	(0,60)	
XS1054522922	ING VERZEKERINGEN VAR 14-08/APR/24	112.962	3,82%	Bonds	5	(0,59)	(0,36)	(0,84)	(0,19)	(0,18)
ES0213679196	BANKINTER SA 6,375% 09-11/SEP/19	111.792	3,79%	Bonds	4	0,03	(0,38)	(1,87)	(0,54)	
XS1014627571	UNICREDIT SPA 3,25% 14-14/JAN/21	109.809	3,72%	Bonds	4	(0,98)	(0,60)	(1,79)	(0,60)	
XS1083986718	AVIVA PLC VAR 14-03/JUL/24	109.764	3,72%	Bonds	4	(0,04)	(0,37)	(1,71)	(0,58)	
XS0868458653	TELECOM ITALIA SPA 4% 12-21/JAN/20	108.691	3,68%	Bonds	4	(0,67)	(0,55)	(1,81)	(0,58)	
FR0011567940	PEUGEOT SA 6,5% 13-18/JAN/18	108.433	3,67%	Bonds	4	(0,75)	(0,43)	(1,88)	(0,56)	
XS0995040051	ANGLO AMERICAN CAP 2.875% 13-	108.154	3,66%	Bonds	5	(0,54)	(0,60)	(0,88)	(0,17)	(0,18)
XS1051003538	GLINCORE FINANCE EURO 2,75% 14-	107.327	3,63%	Bonds	4	(0,45)	0,07	(1,78)	(0,58)	
XS1084568762	ARCELORMITTAL 2.875% 14-06/JUL/20	106.682	3,61%	Bonds	4	(0,46)	(0,15)	(1,85)	(0,58)	
XS1140860534	GENERALI FINANCE BV VAR 14-30/NOV/20	105.780	3,58%	Bonds	4	(0,73)	(0,34)	(1,73)	(0,60)	
XS1190632999	BNP PARIBAS 2,275% 13-17/FEB/23	105.425	3,57%	Bonds	4	(0,71)	(0,39)	(1,82)	(0,60)	
DE000A1R0410	THYSSENKRUPP AG 3,025% 14-05/OCT/19	105.385	3,57%	Bonds	5	(0,26)	(0,16)	(0,93)	(0,19)	(0,18)
US225310AG67	CREDIT ACCEPTANC 6,125% 14-03/FEB/23	86.281	2,92%	Bonds	3	0,56	(0,14)	(1,11)	(0,54)	
PTBEQKOM019	BANCO ESPIRITO SANTO 2.805% 14-	62.113	2,10%	Bonds	1					

4 Assets Liquidation



This graph shows the number of days needed to liquidate a certain percent of the portfolio. This is built using the liquidity ratings of the individual assets of the portfolio.

Assets Liquidation



	SEC Liquidity Buckets				Compliance with 15% illiquid investments limit
	Can be sold or disposed of in:		Can be converted to cash in:		
Nb of days	> 7 calendar days	<= 7 calendar days*	4-7 calendar days	<= 3 business days	✓
Portfolio liquidity level	Illiquid	Less Liquid	Moderately Liquid	Highly Liquid	
Weight	0.00%	2.01%	6.61%	89.91%	

* but settlement is reasonably expected to take more than 7 calendar days

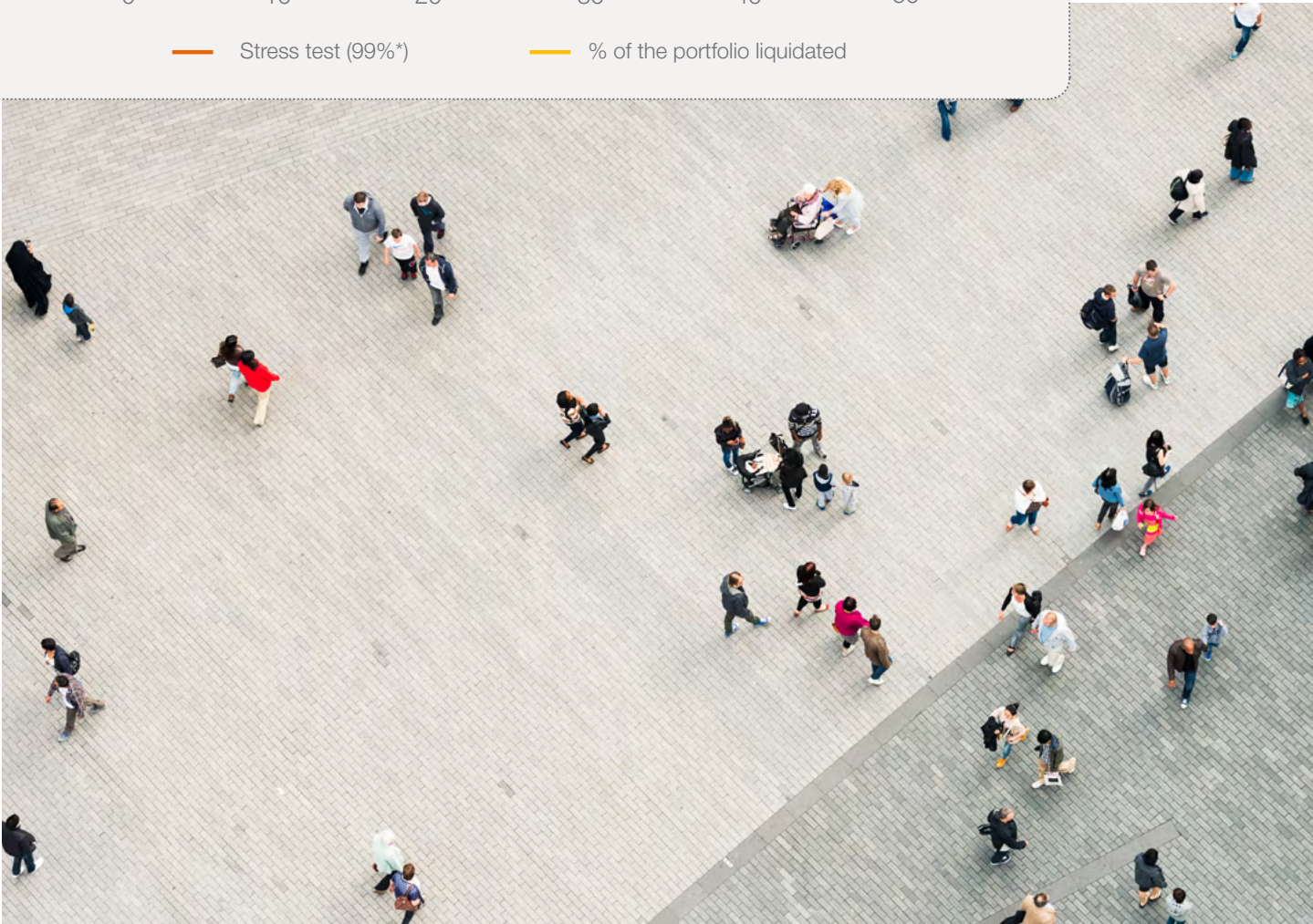
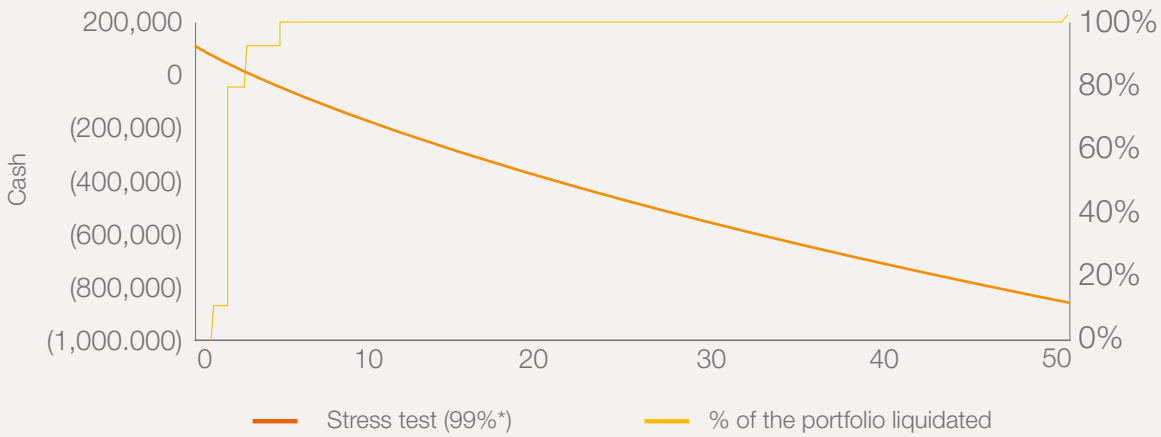
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ALM View



The Asset and Liability Management (ALM) graphical view provides with an easy-to-understand and quick status of the coverage of the potential redemptions (I.e. cash outflows) by the estimated liquidation of the assets (I.e. cash inflows). It enables clients to quickly identify any potential mismatch between the redemption profile of the fund and its portfolio liquidity level.

ALM View



How we can help you

Our specialist team members have gained a strong expertise as consultants and through their experience within the financial industry. As a result, they are able to quickly understand your concerns. Our solution is proportionate to the scale, diversity and complexity of your activities, hence it is really tailored and sound.



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